REMARKS

Claims 1-55 are pending in the present application. Upon entry of the instant amendments, Claims 1-13 as amended will be pending.

Claims 14-55 have been canceled as being directed to non-elected subject matter; the cancellation is made without prejudice to or disclaimer of the subject matter therein.

Claims 1, 6, 7, and 13 have been amended to better define certain embodiments of the invention, notwithstanding the Applicants' belief that the unamended claims would have been allowable, and without acquiescing to any of the Examiner's arguments, and without waiving the right to prosecute in the future the unamended (or similar) claims in another application, for the purpose of furthering the Applicants' business goals and expediting the patent application process in a manner consistent with the PTO's Patent Business Goals (PBG).[1] None of the amendments to the claims is related to the statutory requirements of patentability unless expressly stated so herein. No amendment made herein was intended to narrow the scope of any of the amended claims.

In particular, Claim 1 has been amended to indicate that the moiety is attached to a surface of a layered silicate; support is found throughout the specification (see, for example, page 5, lines 28-29; page 9, lines 9 and 21-24). Claim 6 is amended to indicate that it is the surface of the layered contacted and to which molecules are bound; this amendment brings Claim 6 into conformance with the language of Claim 1 to provide antecedent basis. Claim 7 is amended to correct a typographical error, such that Claim 7 is dependent from Claim 6 rather than Claim 1. Finally, Claim 13 is rewritten in independent form, incorporating the elements of the claims from which it depends.

In the Office Action dated December 13, 2002, the Examiner made a number of objections and rejections. For clarity, the objections and rejections at issue are set forth by number in the order they are herein addressed:

(1) The application does not contain an abstract of the disclosure as required under 37 CFR 1.72(b);

(2) The specification is objected to;

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[1] 65 Fed. Reg. 54603 (September 8, 2000).

(3) Claims 6 and 7 are rejected under 35 USC 112, second paragraph, as allegedly indefinite;

(4) Claims 1 and 4-12 are rejected under 35 USC 103(a), as allegedly obvious over Hirabayashi *et al.* (1990, J. Mol. Recog. 3: 204-207; "Hirabayashi 1990") in view of Müller *et al.* (1995, Biophys. J. 68: 1681-1686; "Müller");

(5) Claims 1-12 are rejected under 35 USC 103(a), as allegedly obvious over Hirabayashi *et al.* (1992, J. Chromatogr. 597: 181-187; "Hirabayashi 1992") in view of Müller *et al.* (1995, Biophys. J. 68: 1681-1686; "Müller");

(6) Claims 1-5, 8 and 9 are rejected under 35 USC 103(a), as allegedly obvious over Müller *et al.* (1995, Biophys. J. 68: 1681-1686; "Müller") in view of Hirabayashi *et al.* (1992, J. Chromatogr. 597: 181-187; "Hirabayashi 1992");

(7) Claims 1-12 are rejected under 35 USC 103(a), as allegedly obvious over Sassenfeld *et al.* (1984, Biotechnol. 2: 76-81; "Sassenfeld") in view of Geke *et al.* (1997, J. Colloid and Interface Science 189: 283-287; "Geke"); and

(8) Claim 13 is objected to as depending from a rejected claim.

Applicants believe that the following remarks traverse the Examiner's rejections of the claims. These remarks are presented in the same order as the above rejections.

1. The Abstract

The Examiner objected to the application on the ground that it does not contain an abstract of the disclosure as required under 37 CFR 1.72(b) (Office Action, item 8, pages 2-3). The Examiner noted that because the application is a 371 application of PCT/US98/18531, a copy of the published abstract from the PCT application is placed in the instant application as page 42 (Office Action, item 8, pages 2-3).

The Applicants do not desire to amend the abstract from the PCT application in this Response.

2. The specification has been amended.

The Examiner objected to the specification for a number of reasons. These reasons are addressed separately below. For the reasons provided below, the Applicants respectfully request the withdrawal of the objections to the specification.

(a) The claim to priority has been amended

The Examiner asserted that the first paragraph does not accurately reflect the priority information, and requested that the specification be corrected to contain the information indicated under the section headed "Priority." (Office Action, items 9(a), page 3, and 5, page 2).

The Applicants have amended the specification such that the correct priority information is now included in the specification. Thus, the Applicants' claim to priority has been corrected.

(b) The use of trademarks is correct

The Examiner noted the use of trademarks in the specification, such as on page 35, line 22: "Triton X-100" (Office Action, item 9(b), page 3). The Examiner noted that the recitations of a trademark should be capitalized wherever it appears and be accompanied by the generic terminology and suggested that the Applicants examine the whole specification to correct recitations of trademarks (Office Action, item 9, page 3).

The Applicants have reviewed the specification, and have amended the recitation of trademarks such that a trademark is capitalized wherever it appears and is accompanied by the generic terminology. Thus, the use of trademarks in the specification is correct.

(c) A recitation has been corrected.

The Examiner noted that the recitation "application USSN ___/___/___" at line 5 of page 28 of the specification appears to be incomplete (Office Action, item 9 (c), page 3).

The Applicants have amended the specification to complete this recitation.

3. The claims are definite

Claims 6 and 7 are rejected under 35 USC 112, second paragraph, as allegedly indefinite. These rejections are discussed separately below.

(a) Claim 6 has proper antecedence

The Examiner asserted that Claim 6 lacks proper antecedence in the recitation: "said layered silicate" (Office Action, item 10 (a), page 3). The Examiner notes that Claim 6 depends from Claim 1, and asserts that Claim 1 recites "a layered silicate surface," but not "a layered silicate" (Office Action, item 10 (a), page 3).

The Applicants note that the recitation in Claim 1 of "a layered silicate surface" is perfectly clear and acceptable, as the phrase refers to, and means, the surface of a layered silicate; this meaning is also indicated in numerous places throughout the specification (see, for example, page 5, lines 28-29; page 9, lines 9 and 21-24).

However, the Applicants have amended Claims 1 and 6 to indicate that a moiety is attached to a surface of a layered silicate (Claim 1) and that said surface of said layered silicate is contacted (Claims 1 and 6). These amendments were made notwithstanding Applicant's belief that the unamended claims would have been allowable, without acquiescing to any of the Examiner's arguments, and without waiving the right to prosecute the cancelled (or similar) claim in another application, for the purpose of furthering Applicant's business goals and expediting the patent application process. Thus, Claim 6 has proper antecedence, and the Applicants respectfully request the withdrawal of this rejection of the claim.

(b) Claim 7 has proper antecedence

The Examiner asserts that Claim 7 has improper antecedence for the recitation: "said sodium salt," on the basis that Claim 7 depends from Claim 1 which does not recite any sodium salt (Office Action, item 10 (b), page 3).

The Applicants thank the Examiner for pointing out this typographical error, and have amended Claim 7 such that it now depends from Claim 6, which does recite sodium salt. Claim 7 now has proper antecedence, and the Applicants respectfully request the withdrawal of this rejection of the claim.

4. Claims 1 and 4-12 are not obvious

Claims 1 and 4-12 are rejected under 35 USC 103(a), as allegedly obvious over Hirabayashi *et al.* (1990, J. Mol. Recog. 3: 204-207; "Hirabayashi 1990") in view of Müller *et al.* (1995, Biophys. J. 68: 1681-1686; "Müller") (Office Action, item 12, pages 4-5). The Examiner asserts that Hirabayashi 1990 taught a method of immobilizing a biological molecule to an agarose substrate, and admits that the publication does not teach the use of mica (Office Action, item 12, page 4). The Examiner further asserts that Müller taught that it was conventional to use mica as an alternative substrate for attaching a biomolecular moiety thereon via a polyamino acid tag (Office Action, item 12, page 4). The Examiner then concludes that it would have been obvious to replace Hirabayashi 1990's agarose substrate with Müller's mica to produce the instant invention (Office Action, item 12, pages 4-5).

The Applicants respectfully traverse the Examiner's rejections. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. (MPEP § 2143). However, none of these elements is established.

The Applicants note first that the Examiner's characterization of Hirabayashi 1990 is incorrect. Even in its abstract, the reference states that a mutant recombinant lectin, to which an arginine tail was introduced at the C terminus, became recognizable by **anhydrotrypsin**, due apparently to a characteristic property of anhydrotrypsin which is its ability to strongly bind C-terminal arginine. The abstract further states that the mutant lectin was adsorbed on an **anhydrotrypsin**-agarose column, and NOT to agarose, as the Examiner stated. In fact, the introduction of the reference states that the publication is directed to a "new application of **immobilized anhydrotrypsin**, that is, for the purpose of specific isolation of recombinant proteins," (page 204, first column), which includes the "specific adsorption of the mutant protein with **immobilized anhydrotrypsin**" (page 204, second column). Thus, the reference DOES NOT TEACH immobilizing a biological molecule to an agarose substrate, as the Examiner asserts.

Moreover, the Examiner's characterization of Müller is also incorrect. This reference is directed to using an atomic force microscope to produce images of bacterial purple membranes in buffer solution, where the membranes were adsorbed to mica (abstract). In the reference, the mica is a surface to which the membrane solution is applied (see page 1681, second column, Materials and Methods, Specimen preparation). Müller DOES NOT TEACH that it was conventional to use mica as an **alternative substrate** for attaching a biomolecular moiety, as the Examiner asserts. Moreover, the reference does not mention a polyamino acid tag, or any tag at all, and so cannot teach that it was conventional to use mica as an **alternative substrate** for attaching a biomolecular moiety thereon via a **polyamino acid tag**, as the Examiner asserts.

Given that the Examiner has mischaracterized both references, there is NO MOTIVATION to combine them to arrive at the Applicants' invention. Thus, the Examiner has not met the first requirement to establish a *prima facie* case of obviousness.

Moreover, given what these references actually do describe, they do not teach or suggest all the claim limitations, since they lack description of the elements, for example, of contacting an arginine tag with a surface of a layered silicate, as is claimed in Claim 1.

Also, given that the references do not teach or suggest all of the claim limitations, their combination would not successfully result in the claimed invention.

Thus, the Examiner has not established a *prima facie* case of obviousness, and for this reason, the Applicants respectfully request the withdrawal of this rejection of Claims 1 and 4-12.

5. Claims 1-12 are not obvious

Claims 1-12 are rejected under 35 USC 103(a), as allegedly obvious over Hirabayashi *et al.* (1992, J. Chromatogr. 597: 181-187; "Hirabayashi 1992") in view of Müller *et al.* (1995, Biophys. J. 68: 1681-1686; "Müller") (Office Action, item 13, pages 5-6). The Examiner asserts that Hirabayashi 1992 taught a method of using an arginine tag to attach a moiety to a resin substrate, and admits that the reference does not teach the use of mica in their method (Office Action, item 13, page 5). The Examiner further asserts that Müller taught that it was conventional to use mica as an alternative substrate for attaching a biomolecular moiety via a polyamino tag. The Examiner then concludes that it would have been obvious to replace

Hirabayashi 1992's resin substrate with Müller's mica to produce the instant invention (Office Action, item 13, pages 5-6).

The Applicants first note that the Examiner has also mischaracterized Hirabayahsi 1992. The reference states in its abstract that the "arginine-tail method is a recently developed affinity tag procedure utilizing immobilized **anhydrotrypsin** for specific enrichment of a recombinant protein" where the recombinant proteins "became recognizable by **anhydrotrypsin**" and "were adsorbed on an **anhydrotrypsin**-agarose column." The reference further states that the authors "recently developed a novel procedure utilizing immobilized **anhydrotrypsin**, which is an enzymatically inactive derivative of trypsin but shows a unique property of binding preferentially to product-type compounds," where the procedure includes "adsorption of the derived arginine-tailed protein on **anhydrotrypsin** agarose" (page 181, second column). Thus, Hirabayashi 1992 DOES NOT TEACH using an arginine tag to attach a moiety to a resin substrate, as the Examiner asserts.

Moreover, for the reasons stated above, the Examiner also mischaracterizes Müller 1990.

Thus, for this rejection as well, given the mischaracterization of both references, there is NO MOTIVATION to combine them to arrive at the claimed invention. Thus, the first requirement to establish a *prima facie* case of obviousness has not been met for this rejection as well.

Moreover, given what these references actually do describe, they do not teach or suggest all the claim limitations, since they lack description of the elements, for example, of contacting an arginine tag with a surface of a layered silicate, as is claimed in Claim 1.

Also, given that the references do not teach or suggest all of the claim limitations, their combination would not successfully result in the claimed invention.

Thus, the Examiner has not established a *prima facie* case of obviousness for this rejection, and for this reason, the Applicants respectfully request the withdrawal of this rejection of Claims 1-12.

6. Claims 1-5, 8 and 9 are not obvious

Claims 1-5, 8 and 9 are rejected under 35 USC 103(a), as allegedly obvious over Müller *et al.* (1995, Biophys. J. 68: 1681-1686; "Müller") in view of Hirabayashi *et al.* (1992, J.

Chromatogr. 597: 181-187; "Hirabayashi 1992") (Office Action, item 14, pages 6-7). The Examiner asserts that Müller taught a method of adsorbing purple membranes to mica via polylysine (i.e., a tag), and admits that the reference does not teach the use of an arginine tag in their method (Office Action, item 14, page 6). The Examiner further asserts that Hirabayashi 1992 taught the use of an arginine tag to attach a moiety to a resin substrate (Office Action, item 14, page 6). The Examiner concludes that it would to replace Müller's polylysine tag with Hirabayashi's arginine tag to produce the instant invention (Office Action, item 15, page 6). However, the Examiner is incorrect.

Müller describes **coating** freshly cleaved **mica with polylysine** hydrobromide; after drying, purple membranes were then adsorbed to the coated mica to favor one orientation of membrane attachment (see page 1681, second column, Materials and Methods, Specimen preparation). Thus, Müller DOES NOT TEACH a polylysine tag, as the Examiner asserts, but rather a **polylysine coating**; thus, it would not be obvious to replace Müller's polylysine tag with Hirabayashi's arginine tag to produce the claimed invention, because Müller does not teach a polylysine tag.

Moreover, as noted above, the Examiner's characterization of Hirabayashi 1992 is incorrect. Thus, even if the Examiner HAD characterized Müller correctly, which was not done, it still would not be obvious to replace Müller's polylysine tag with Hirabayashi's arginine tag to produce the instant invention.

Because of these mischaracterizations, the Examiner has not provided a motive to combine the references.

Moreover, given what these references actually do describe, they do not teach or suggest all the claim limitations, since they lack description of the elements, for example, of contacting an arginine tag with a surface of a layered silicate, as is claimed in Claim 1.

Also, given that the references do not teach or suggest all of the claim limitations, their combination would not successfully result in the claimed invention.

Thus, the Examiner has not established a *prima facie* case of obviousness, and the Applicants respectfully request that the rejection of Claims 1-5, 8, and 9 be withdrawn.

7. Claims 1-12 are not obvious

Claims 1-12 are rejected under 35 USC 103(a), as allegedly obvious over Sassenfeld *et al.* (1984, Biotechnol. 2: 76-81; "Sassenfeld") in view of Geke *et al.* (1997, J. Colloid and Interface Science 189: 283-287; "Geke") (Office Action, item 15, pages 7-8). The Examiner asserts that Sassenfeld taught a method of attaching, conjugating or fusing a moiety or recombinant biomolecule having a C-terminal polyarginine (i.e., tag) for use in ion-exchange purification, and admits that the reference does not teach the use of a layered silicate or a mica substrate in their method (Office Action, item 15, page 7). The Examiner further asserts that the use of mica in ion exchange was well known, as exemplified by Geke, who taught the use in ion exchange of a layered silicate, such as mica (Office Action, item 15, page 7). The Examiner concludes that it would have been obvious to replace Sassenfeld's substrate with Geke's layered silicate, such as mica, to produce the instant invention (Office Action, item 15, page 7). The Applicants disagree because the combined references teach away from the claimed invention.

The Applicants note that Sassenfeld describes producing human urogastrone with a C-terminal polyarginine by recombinant DNA technology, and then purifying the peptide fusion by a two step **ion-exchange** purification (abstract, emphasis added). The first step was based upon the **unusual basicity** of the **polyarginine**-fused protein; the polyarginine was removed by carboxypeptidase B before the second step (abstract, emphasis added). The ion exchange purification in the first step was accomplished with a sulphated cation exchange resin (page 77, second column, Results), where it was postulated that because **arginine** is the **most basic amino acid**, the **polyarg-fusion should bind strongly to a cation exchanger** at acid pH (page 78, first column, Discussion, emphasis added).

Geke (1997) describes the adsorption of poly(ethylene oxide) on mica as promoted by cationic end groups, where **cation-terminated polymers adsorb on mica surfaces** by ion exchange (abstract, emphasis added). Given Geke's description that adsorption on mica is promoted by cationic end groups, and the postulation in Sassenfeld that arginine is the most basic amino acid and that polyarginine should bind strongly to a cation exchanger, it would NOT BE OBVIOUS that a polyarginine, a very basic moiety, would bind to a surface on which adsorption is promoted by cationic end groups. In fact, in combination, the references teach away from the claimed invention.

Indeed, the observation that arginine and polyarginine show a highly specific interaction with the surfaces of layered silicates was described in the specification as a **surprising discovery** (see page 4, lines 6-7, emphasis added). This interaction was particularly surprising in view of the fact that the surface of layered silicates such as mica are negatively charged (see specification, page 9, lines 21-24), and as such would not be expected to bind a known very basic moiety such as arginine or polyarginine (as described by Geke, 1997). The binding reaction between arginine or polyarginine and a layered silicate was described in the specification as "previously unknown" (see page 10, lines 1-2).

Thus, contrary to the Examiner's assertion, it WOULD NOT BE OBVIOUS to replace Sassenfeld's substrate with Geke's layered silicate, such as mica, to arrive at the claimed invention. Not only does the Examiner fail to provide a motive for combining the references, but the combination of the references themselves teach away from the claimed invention. Moreover, given that the references teach away from the claimed invention, there is no reasonable expectation that their combination would successfully result in the Applicants' claimed invention. Thus, the Examiner has not established a *prima facie* case of obviousness, and the Applicants respectfully request that the rejection of Claims 1-12 be withdrawn.

8. Claim 13 is allowable

Claim 13 is objected to as dependent from a rejected claim, but the Examiner states that the subject matter of claim 13 is free of prior art currently of record (Office Action, item 18, page 8).

The Applicants have amended Claim 13 to be rewritten in independent form, incorporating the elements of the claims from which it depends. Therefore, the Applicants respectfully request the withdrawal of the objection, and the allowance of this claim.

CONCLUSION

For the reasons set forth above, it is respectfully submitted that the Applicants' claims should be allowed. Should the Examiner believe that a telephone interview would aid in the prosecution of this application, the Applicants encourage the Examiner to call the undersigned **before beginning to draft another written communication** (if any).

Dated: April 2, 2003

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APPENDIX I

MARKED-UP VERSION OF REWRITTEN, ADDED, AND/OR CANCELLED PARAGRAPHS AND CLAIMS

The following includes a marked-up version of the paragraphs and/or claims pursuant to 37 C.F.R. §§ 1.121 (b)(1)(iii) and 1.121 (c)(1)(ii) with instructions and markings showing changes made herein to the previous version of record of the claims. Brackets denote deleted text, and underlining denotes added text.

IN THE SPECIFICATION:

Deleted paragraph on page 1, lines 4-5:

[This is a continuation of U.S. Patent Application No: 60/057,929, filed on September 4, 1997 which is incorporated herein by reference in its entirety for all purposes.]

Added paragraph to replace deleted paragraph:

This Application claims priority to PCT/US98/18531, filed September 3, 1998, and to Provisional Patent Application Serial No. 60/057,929, filed on September 4, 1997, now abandoned, which is herein incorporated by reference in its entirety for all purposes.

Amended paragraph on page 28, lines 3-7:

Detailed assays for inhibitors or enhancers of interactions between molecular motor components or cytoskeletal components generally are described in copending application [USSN __/__/__] USSN 60/057,895 entitled "High Throughput Assays for Detecting Modulators of Cyotskeletal Function" filed on September 4, 1997, naming James Spudich, Ron Vale, and Daniel Pierce as inventors.

Amended paragraph on page 30, lines 20-30:

The arginine tags of this invention can also be used to purify the moiety (*e.g.*, polypeptide(s)) to which they are linked. Specifically, the arginine tag can be used in conjunction with virtually any anion or cation exchange resin. (It will be appreciated that an

anion resin will be used to capture other species and exclude the arg-tagged moieties.) Because the arginine tags are more charged than other tags in current use, the arginine tags are expected to provide greater affinity to cation resins resulting in more effective purification. Suitable anion and cation exchange resins are well known to those of skill in the art and are commercially available. Cation exchange resins, for example include, but are not limited to, carboxymethylcellulose, while anion exchange resins include, but are not limited to, DEAE cellulose, DEAE [sepharose] SEPHAROSE gel filtration ion exchange media, heparin, and the like.

Amended paragraph on page 35, line 16 to page 36, line 2:

All of the expressed proteins carry a vector-encoded tag of a hexa-histidine sequence for purification by metal chelate affinity chromatography on a Ni^{2+}/NTA matrix (Qiagen, Santa Clarita, CA). The cells were grown at 37°C by shaking in LB-medium containing 25 mg/ml Kanamycin. At an OD_{600} of 0.8 the cells were induced with 1 mM IPTG, and 5h later, they were harvested by centrifugation at 6000xg for 10 min. The cells were lysed by addition of lysozyme at a concentration of 100 mg/ml and 10 % (v/v) of 1 % [Triton X-100] TRITON X-100 non-ionic detergent octylphenol ethylene oxide condensate in 50 mM Tris-HCl pH 7.5, 50 mM KCl, 1 mM EDTA. After incubation for 30 min on ice, [MgCL2] $MgCl_2$ was added to a final concentration of 40 mM. The liberated DNA was digested by adding 0.2 mg DNaseI per ml lysate. The lysate was incubated for 15 min on ice and then centrifuged at 30,000xg for 40 min. The clear supernatant was dialyzed against buffer containing 10 mM Hepes/NaOH pH 7.4, 50 mM NaCl, and then applied to a Ni^{2+}/NTA column. Weakly bound proteins were eluted with 10 mM imidazole pH 8.0. The His-tagged proteins were eluted with 500 mM imidazole in the case of GFPH6 and with 500 mM imidazole, 500 mM NaCl for all the other variants (the Arg-tag caused a strong ionic interaction with Ni^{2+}/NTA matrix). The eluted proteins were dialyzed against buffer containing 10 mM Hepes/NaOH pH 7.4, 50 mM NaCl, 50 % glycerol and stored at -20°C. The purity of the recombinant proteins was estimated by SDS-polyacrylamide gel electrophoresis and found to be greater than 95%.

Amended paragraph on page 36, lines 17:

Mica sheets were cut into pieces of 5x5 cm^2 and freshly cleaved immediately before use. Droplets of protein solutions (GFPH6, GFPR6, GFPH6R6) at a concentration of 10 mg/ml were applied onto the previously unexposed, hydrophilic surfaces resulting in aqueous films of approximately 4 cm^2 in size. After incubation for 5 min, the mica sheets were washed with 10 ml of water. The central parts, 1 cm^2 in size, were then cut out to ensure that no contaminants from the edges could falsify the subsequent analyses. For each data point four surfaces were analyzed and the readings were averaged. These surfaces, stored separately in [Eppendorf] EPPENDORF microcentrifuge tubes, were then subjected to consecutive one-min washing steps with 400 ml 10 mM Hepes/NaOH buffer pH 7.4 containing increasing concentrations of salt with different mono- and bivalent cations (50, 125, 250 mM, Na^+, K^+, Mg^{2+}). For quantitation of active, adsorbed GFP, the eluates were collected separately and analyzed by fluorescence measurement at 509 (excitation at 395 nm) using an SLM8000 spectrophotometer (Aminco, Silver Spring, MD) and GFP of known concentration as standard.

IN THE CLAIMS:

1. (Amended once) A method of attaching a moiety to a surface of a layered silicate [surface], said method comprising the steps of:

covalently attaching said moiety to an arginine tag; and

contacting said arginine tag with said surface of said layered silicate [surface].

6. (Amended once) The method of claim 1, wherein said method further comprises contacting said surface of said layered silicate with a solution containing a sodium salt in a concentration sufficient to remove molecules bound to said surface of said layered silicate by non-specific ion exchange.

7. (Amended once) The method of claim [1] 6, wherein said sodium salt is present in a concentration of at least 1 mM.

13. (Amended once) [The method of claim 9,] A method of attaching a protein to a surface of a layered silicate, said method comprising the steps of:

covalently attaching said protein to an arginine tag, and

contacting said arginine tag with said surface of said layered silicate,

wherein said protein is selected from the group consisting of a DNA binding protein, a molecular motor, an actin filament, a microtubule, a myosin filament, an actin binding protein, and a myosin filament binding protein.

APPENDIX II

CLEAN VERSION OF THE ENTIRE SET OF PENDING CLAIMS AS AMENDED IN THIS COMMUNICATION

The following is a list of the claims as they would appear following entry of this amendment.

1. (Amended once) A method of attaching a moiety to a surface of a layered silicate, said method comprising the steps of:

covalently attaching said moiety to an arginine tag; and

contacting said arginine tag with said surface of said layered silicate.

2. The method of claim 1, wherein said arginine tag comprises at least two arginine residues.

3. The method of claim 1, wherein said arginine tag comprises from about two to about 100 arginine residues.

4. The method of claim 1, wherein said arginine tag consists of only arginine residues.

5. The method of claim 1, wherein said layered silicate is mica.

6. (Amended once) The method of claim 1, wherein said method further comprises contacting said surface of said layered silicate with a solution containing a sodium salt in a concentration sufficient to remove molecules bound to said surface of said layered silicate by non-specific ion exchange.

7. (Amended once) The method of claim 6, wherein said sodium salt is present in a concentration of at least 1 mM.

8. The method of claim 1, wherein said moiety is a biological molecule.

9. The method of claim 8, wherein said biological molecule is a protein.

10. The method of claim 9, wherein said protein is chemically conjugated to said arginine tag.

11. The method of claim 9, wherein said protein is fused to the amino or carboxyl terminus of said arginine tag.

12. The method of claim 9, wherein said protein is recombinantly expressed as a fusion protein with said arginine tag.

13. (Amended once) A method of attaching a protein to a surface of a layered silicate, said method comprising the steps of:

covalently attaching said protein to an arginine tag, and

contacting said arginine tag with said surface of said layered silicate,

wherein said protein is selected from the group consisting of a DNA binding protein, a molecular motor, an actin filament, a microtubule, a myosin filament, an actin binding protein, and a myosin filament binding protein.